

CONSERVATION, AQUIFER RECHARGE AND DRAINAGE ELEMENT

Introduction

It is the intent of this Element to identify, conserve, appropriately use, protect and restore the biological, geological and hydrological resources of Miami-Dade County. Since the adoption of the Comprehensive Development Master Plan (CDMP) in 1975, Miami-Dade County has been committed to protection of environmentally sensitive wetlands and aquifer recharge and water storage areas. Within the past decade, protecting and restoring environmentally sensitive uplands has been recognized as important to the County's present and future. Since 1975, Miami-Dade County has sought to channel growth toward those areas that are most intrinsically suited for development. This Element and the proposed natural resources objectives, policies and maps in the Land Use Element and Coastal Management Element continue that established trend.

The environmental sensitivity of Miami-Dade County is underscored by the fact that the urban portion lies between two national parks, Everglades and Biscayne National Parks, and the Florida Keys National Marine Sanctuary. The close proximity of an expanding urbanized area to national and State resource-based parks, and over 6,000 acres of natural areas within County parks, presents a unique challenge to Miami-Dade County to provide sound management. The County has addressed this challenge in several ways including working closely with other public and private sector agencies and groups to obtain a goal of sustainability. The close relationship of tourism to the preservation of Miami-Dade County's unique native plants and wildlife has been recognized as an economic as well as environmental issue. The Conservation Element builds upon past and present initiatives such as the East Everglades Resource Management Plan, and planning for the Bird Drive-Everglades, Arch Creek, and C-111 Basins, the Governor's Commission on a Sustainable South Florida, the South Florida Ecosystem Restoration Task Force, the Comprehensive Everglades Restoration Plan and over three decades of local planning, monitoring, and evaluating proposed activities in wetlands and uplands.

Since the establishment of the Miami-Dade County Department of Environmental Resources Management (DERM) in 1974, Miami-Dade County has developed several comprehensive and innovative programs such as the Northwest Wellfield Protection Plan to protect the Biscayne Aquifer, the County's sole source of drinking water. Moreover, since the adoption of the CDMP in 1975, Miami-Dade County has been sensitive to the multiple challenges of water resource management. The present County programs also implement stormwater management plans to eliminate pollution to water bodies: freshwater, estuarine, and coastal, and natural areas management, to eliminate the invasion of exotic pest plants that threaten native ecosystems.

Chapter 163.3177(6)(d), Florida Statutes mandates that this element contain one or more goal statements which address the conservation, use and protection of the following natural resources: air, water, recharge areas, wetlands, waterwells, soils, minerals, floodplains, forests, fisheries, wildlife, beaches, shores, estuarine marshes, rivers, lakes, bays, harbors, marine habitats, and other natural resources.

Coastal wetlands, beaches and shores, estuarine marshes, rivers, lakes, bays, harbors, marine fisheries, marine habitats, marine wildlife, estuarine water quality and other marine and oceanic resources are discussed in the Coastal Management Element.

The 2003 Evaluation and Appraisal Report contains information on air and water quality, wellfield protection, flood protection, aquifer recharge and drainage, wetlands, upland forests and fish and wildlife, and serves as the basis for updates to the *Adopted Components* of this Element. Two appendices that were included in the 1995 Evaluation and Appraisal Report have been updated herein to be consistent with current State and federal endangered, threatened and species of special concern listings.

GOAL

PROVIDE FOR THE CONSERVATION, ENVIRONMENTALLY SOUND USE, AND PROTECTION OF ALL AQUATIC AND UPLAND ECOSYSTEMS AND NATURAL RESOURCES, AND PROTECT THE FUNCTIONS OF AQUIFER RECHARGE AREAS AND NATURAL DRAINAGE FEATURES IN MIAMI-DADE COUNTY.

Objective CON-1

Improve air quality in the County to meet all National Ambient Air Quality Standards set by the Environmental Protection Agency (EPA) and their respective deadlines; and reduce human exposure to air pollution.

Policies

- CON-1A. Miami-Dade County shall maintain the objectives of the County's air permitting programs in an effort to prevent and control industry emissions of EPA-defined criteria and toxic air pollutants. The County shall also administer state and federal agreements and work plans, integrating any new rules and regulations into existing County programs.
- CON-1B. Significant enhancement of public transit services and implementation of transportation system management (TSM) programs including such measures as ride-share incentives, employer-based transportation management and the use of flex-time shall continue to be implemented in Miami-Dade County to provide feasible and attractive alternatives to use of the private automobile.

- CON-1C. Residential and other high occupancy land uses shall not be located in areas that may be adversely impacted by stationary sources of air pollutant emissions. Additionally, industrial and commercial uses with permitted stationary sources of air pollutant emissions shall not be located in residential and other high occupancy areas.
- CON-1D. Miami-Dade County shall monitor inspection and enforcement activities required by the Florida Department of Agriculture and Consumer Services to determine whether pesticide application in Miami-Dade County is being conducted according to the label. In an attempt to reduce pesticide use, Miami-Dade County shall encourage integrated best management practices whenever practical.
- CON-1E. As required by the label, applications of methyl bromide and other volatile fumigants for agricultural pest controls shall only be performed by users who are knowledgeable about the hazards, and trained in the use of the required respirator equipment and detector devices, emergency procedures, and proper use of the fumigant. Once every two years, the Miami-Dade County Cooperative Extension Service should coordinate workshops for the manufacturers to present their training programs to users of volatile fumigants in Miami-Dade County.
- CON-1F. Renovation and demolition projects will be regulated pursuant to the National Emissions Standard for Asbestos to prevent exposure to asbestos, a known human carcinogen.
- CON-1G. Continue cooperative federal and regional efforts to measure and analyze community impacts of toxic air pollutants in Miami-Dade County.
- CON-1H. The Class 1 Air Quality Area of Everglades National Park and the Class 2 Air Quality Area of Biscayne National Park and the Big Cypress National Preserve shall be protected.
- CON-1I. The use of ozone depleting compounds such as chlorofluorocarbons (CFCs) and hydrochlorofluorocarbons (HCFCs) as refrigerants shall be strictly regulated and controlled in Miami-Dade County. The sale and purchase of ozone depleting compounds shall be limited to permitted businesses and certified technicians only. All products that utilize or were manufactured using ozone depleting compounds as a propellant or blowing agent are prohibited for sale within Miami-Dade County.
- CON-1J. Miami-Dade County shall continue to implement its CO₂ Plan recommendations to reduce CO₂ levels.
- CON-1K. Miami-Dade County shall maintain and expand its air monitoring network in order to better evaluate air quality throughout the County.
- CON-1L. Miami-Dade County shall continue to identify and obtain funding sources for air monitoring programs and voluntary efforts to improve air quality.

Objective CON-2

Protect ground and surface water resources from degradation, provide for effective surveillance for pollution and clean up polluted areas to meet all applicable federal, state and County ground and surface water quality standards.

Policies

- CON-2A. The basin stormwater master plans produced by Miami-Dade County pursuant to Objective CON-5 will establish priority listings of stormwater/drainage improvements to correct existing system deficiencies and problems and to provide for future development. At a minimum, these lists shall include:
- Drainage/stormwater sewer systems within wellfield protection areas;
 - Drainage/stormwater sewer systems in industrial and heavy business areas and areas with large concentrations of small hazardous waste generators;
 - Basins and sub-basins that fail to meet the target criteria for the twelve NPDES priority pollutants listed in Policy CON- 5A.
- CON-2B. Miami-Dade County's Stormwater Utility Program shall fund the identification and retrofitting of deteriorated storm sewer systems and positive outfalls and the proper maintenance of stormwater systems.
- CON-2C. Interim wastewater treatment plants within the Urban Development Boundary shall continue to be phased out as sewer service becomes available, with highest priority given to phasing out of existing industrial wastewater plants in accord with regulations and procedures established by the Board of County Commissioners. The Department of Environmental Resources Management shall use its administrative, enforcement, and permitting authority to implement these regulations.
- CON-2D. Sewer Improvement Special Taxing Districts shall be established for all industrial and potentially hazardous commercial areas within the Urban Development Boundary.
- CON-2E. Industries and businesses that generate and/or handle more than 50 gallons of hazardous and industrial wastes per year shall be identified and monitored. Coordination among agencies that require reporting of hazardous wastes shall be improved.
- CON-2F. Miami-Dade County shall continue to utilize Best Management Practices established for potential sources of water pollution, that discharge wastewater to the ground, to reduce environmental risk and, where possible, to begin effective water reuse and recycling. Established management practices may be reviewed and modified as new science becomes available. New management practices shall be developed for new potential sources of water pollution as they are identified.

- CON-2G. Best Management Practices for potential sources of water pollution shall include reduction in the use of hazardous materials and, wherever possible, the reuse and recycling of materials on site. Best Management Practices shall also be established to address those wastes that must be removed from site, including reusing and recycling of the waste in other operations. All practical recycling and reuse alternatives shall be investigated before seeking permanent disposal of hazardous wastes.
- CON-2H. Miami-Dade County shall evaluate the amount and methods of application for fertilizers and pesticides as necessary to promote efficient plant growth and minimize leaching to the ground water.
- CON-2I. Data and information from hazardous facilities inspection programs and clean-ups of current and historical hazardous waste spills shall be integrated with wellfield monitoring data on a Geographical Information System (GIS) to determine overall water quality in wellfield recharge areas and risk to public drinking water supplies.
- CON-2J. Miami-Dade County shall implement a 500-foot protection zone for non-community, non-transient water supplies that serve uses such as public or private schools and trailer parks.
- CON-2K. Miami-Dade County shall use the data generated in its ambient ground and surface water monitoring programs to determine normal background levels for the twelve National Pollution Discharge Elimination Systems (NPDES) priority pollutants and any other pollutants of interest.

Objective CON-3

Regulations within wellfield protection areas shall be strictly enforced. The recommendations of the NW Wellfield Protection Plan shall continue to be fully implemented, as are recommendations that evolve from the West Wellfield and South Dade Wellfield planning processes.

Policies

- CON-3A. No new facilities that use, handle, generate, transport or dispose of hazardous wastes shall be permitted within wellfield protection areas, and all existing facilities that use, handle, generate, transport or dispose of more than the maximum allowable quantity of hazardous wastes (as specified in Chapter 24-43 of the Code of Miami-Dade County, as may be amended from time to time) within wellfield protection areas shall be required to take substantial measures such as secondary containment and improved operating procedures to ensure environmentally safe operations.

- CON-3B. The water management systems that recharge regional wellfields shall be protected and enhanced.
- CON-3C. County-owned and operated facilities that use hazardous materials or generate hazardous wastes shall be moved to locations that are outside and downgradient of wellfield protection areas whenever such facilities need to be expanded by more than fifty (50) percent.
- CON-3D. Miami-Dade County shall continue to utilize Best Management Practices established for agriculture within wellfield protection areas.
- CON-3E. The area west of the Turnpike, east of the Dade-Broward Levee, north of NW 12th Street and south of Okeechobee Road shall be reserved for limestone mining and approved ancillary uses as provided for in Chapters 24 and 33 of the Miami-Dade County Code and the entire area west of the Turnpike, north of NW 25th Street and south of Okeechobee Road shall remain unurbanized.
- CON-3F. The ambient groundwater monitoring program, which includes all wellfield protection areas, shall be continued to serve as an "early warning system" for monitoring high- risk land uses and point sources.
- CON-3G. Miami-Dade County shall re-evaluate the extent, and mandate periodic updating, of the protection areas for all public water supply wellfields to adjust the protection areas and programs for those wellfields, as warranted. The County shall ensure that new surface water bodies are adequately set back from wellfields to provide an adequate rock buffer to ensure protection of water quality and maintenance of the groundwater classification of the wellfields.
- CON-3H. Miami-Dade County shall identify facilities that handle, use or generate hazardous wastes in wellfield protection areas and address the feasibility of removing the grandfathering provision for facilities that have been determined to be significant sources of pollution within wellfield protection areas.

Objective CON-4

The aquifer recharge and water storage capacity of the presently undeveloped areas in western and southern Miami-Dade County shall be maintained or increased.

Policies

- CON-4A. The aquifer-recharge values of wetland areas shall be maintained and, where feasible, enhanced or restored. There shall be no further positive drainage of wetlands to accommodate urban development or agricultural uses.

- CON-4B. All future development and redevelopment shall use retention, infiltration and detention systems to retain to the maximum extent feasible, the full runoff from a one in five year storm and minimize the use of impermeable surfaces. In the event that an emergency overflow is provided, a minimum of the first inch of runoff shall be retained on-site.
- CON-4C. The approved fill encroachment criteria for the Western C-9 Basin as established by the South Florida Water Management District and for all other basins as established by the Miami-Dade County Department of Environmental Resource Management (Basin B, North Trail and Bird Drive) shall continue to govern the extent to which land can be filled, and additional fill encroachment criteria shall be developed for all the undeveloped, poorly drained areas in western and southern Miami-Dade County which are determined to have urban development potential. These criteria shall retain the predevelopment net recharge and runoff values for basin areas.
- CON-4D. Water conserving irrigation and other landscape practices such as Xeriscape shall be used wherever feasible. Through its site and landscape reviews, Miami-Dade County shall ensure that appropriate native and xeriscape plant materials are used, particularly in the salt-intruded areas of the County where public water is used to water lawns, golf courses and landscaped green spaces.
- CON-4E. Miami-Dade County shall continue to investigate the feasibility of large-scale water reuse through water reuse demonstration projects and other appropriate means.
- CON-4F. The Miami-Dade County Department of Environmental Resources Management (DERM) shall work with the County's Cooperative Extension Department to develop guidelines for improving the efficiency and/or uniformity of irrigation systems for appropriate crops grown in Miami-Dade County.

Objective CON-5

Miami-Dade County shall continue to develop and implement the Stormwater Master Plans comprised of basin plans for each of the twelve primary hydrologic basins being addressed by the County, and cut and fill criteria as necessary to: provide adequate flood protection; correct system deficiencies in County maintained drainage facilities; coordinate the extension of facilities to meet future demands throughout the unincorporated area; and maintain and improve water quality. The Stormwater Master Plan is projected to be completed in 2005, and implementing actions recommended in each basin plan shall continue to commence immediately after the applicable plan is approved. Outside of the Urban Development Boundary the County shall not provide, or approve, additional drainage facilities that would impair flood protection to easterly developed areas of the County, exacerbate urban sprawl or reduce water storage.

Policies

CON-5A. The Stormwater Management (Drainage) Level of Service (LOS) Standards for Miami-Dade County contain both a Flood Protection (FP) and Water Quality (WQ) component. The minimum acceptable Flood Protection Level of Service (FPLOS) standards for Miami-Dade County shall be protection from the degree of flooding that would result for a duration of one day from a ten-year storm, with exceptions in previously developed canal basins as provided below, where additional development to this base standard would pose a risk to existing development. All structures shall be constructed at, or above, the minimum floor elevation specified in the federal Flood Insurance Rate Maps for Miami-Dade County, or as specified in Chapter 11-C of the Miami-Dade County Code, whichever is higher.

1. Basin-specific FPLOS standards shall be established through the adoption of a Stormwater Master Plan to be approved by the Miami-Dade County Board of County Commissioners and the South Florida Water Management District. Until the approval of basin-specific FPLOS standards through this coordinated process, the following additional exceptions shall apply:
 - a) Wherever Miami-Dade County has adopted cut and fill criteria pursuant to Chapter 24-48.3(6) of the County Code (November 30, 2004) including fill encroachment limitations necessary to prevent unsafe flood stages in special drainage basins, the minimum applicable FPLOS standard shall be the degree of protection provided by the applicable cut and fill criteria;
 - b) Where cut and fill criteria have not been established north of S.W. 152 Street inside the Urban Development Boundary (UDB), the minimum acceptable FPLOS standard shall be protection from the degree of flooding that would result for a duration of one day from a ten-year storm;
 - c) West of Levee-31 N, there shall be no off-site drainage, all septic tank drainfields shall be elevated above the hundred-year flood elevation, and the extent of land filling shall be minimized as provided in applicable provisions of the Miami-Dade County East Everglades Zoning Overlay Ordinance. The County shall review these criteria when the water management facilities programmed in the N.E. Shark River Slough General Design Memorandum and the C-111 General Reconnaissance Review are fully operational.
2. The Water Quality Level of Service (WQLOS) component of the standard shall be met when the annual average for each of the following twelve priority NPDES pollutants does not exceed the following target criteria for each of those pollutants within a canal basin, or sub-basin, as determined in accordance with procedures established by Miami-Dade County DERM:

<u>Pollutant</u>	<u>Target Criterion</u>
Biological Oxygen Demand (BOD)	9 mg/l
Chemical Oxygen Demand (COD)	65 mg/l
Total Suspended Solids (TSS)	40 mg/l
Total Dissolved Solids (TDS)	1,000 mg/l
Total Ammonia-Nitrogen and Organic Nitrogen	1.5 mg/l
Total Nitrate (NO _{x-N})	0.68 mg/l
Total Phosphate (TPO4)	0.33 mg/l
Dissolved Phosphate (DPO4)	Not Available
Cadmium (Cd)	0.0023 mg/l
Copper (Cu)	0.0258 mg/l
Lead (Pb)	0.0102 mg/l
Zinc (Zn)	0.231 mg/l

3. Applicants seeking development orders in canal basins, or sub-basins, that do not meet either the FPLOS or the WQLOS shall be required to conform to Best Management Practices (BMPs) as provided by Miami-Dade County Code. Owners of commercial or industrial properties where BMPs are required, shall, at a minimum, demonstrate that their on-site stormwater system is inspected two times per year and maintained and cleaned as required. Private residential developments in areas where BMPs are required shall demonstrate that their on-site stormwater systems are inspected two times per year and maintained and cleaned as required.

CON-5B. Applicants seeking development orders approving any new use or site alteration outside the Urban Development Boundary where the elevation of any portion of the site will remain below County Flood Criteria shall be advised by the permitting agency that those portions of the land that are not filled to Miami-Dade County Flood Criteria may be subject to periodic flooding.

CON-5C. Miami-Dade County shall work with the South Florida Water Management District to better identify the developed urban areas within the County that do not have protection from a one in ten year storm. The County shall develop stormwater management criteria and plans for all unincorporated areas identified. Where such areas fall within municipal boundaries, the County will coordinate the stormwater management planning with the appropriate municipality(ies).

CON-5D. Miami-Dade County shall seek funding for a comprehensive basin-by-basin drainage engineering study which will include: identification of public drainage facilities and private drainage facilities that impact the public facilities, and the entities having operational responsibility for them; establishment of geographic service areas for the drainage facilities; and, a facility capacity analysis by geographic service area for the planning periods 2015 and 2025.

CON-5E. Miami-Dade County shall establish a priority listing of stormwater drainage and aquifer recharge improvements needed to correct existing system deficiencies and

problems, and to provide for future drinking water needs. This shall include:

- Drainage/stormwater sewer system improvements in developed urban areas with persistent drainage problems;
- Canal and/or stormwater drainage improvements in developed urban areas that have less than one in ten year storm protection and where no roadway drainage improvements are planned or proposed, which would remedy the problems;
- Hydrologic modifications that are needed to deliver water to public waterwells or to protect those waterwells from prospective contamination.

This shall be based on such factors as:

- Miles of canals with out-of-bank flow;
- Miles of collector and local streets impassable during a 5 year storm;
- Miles of minor arterial streets impassable during a 10 year storm;
- Miles of principal arterials, including major evacuation routes, that are impassable during a 100 year storm; and
- Number of structures flooded by a 100-year storm.

CON-5F. Miami-Dade County shall implement cut and fill criteria for land in the North Trail, Bird Drive, Basin B, and Western C-9 basins, as defined in Chapter 24 of the County Code, and other areas west of the easterly boundary of Area B identified in the Corps of Engineers Design Memorandum V Supplement 12 dated March 23, 1954, as necessary to protect natural hydrological characteristics of the basins, protect against flooding of developed land in the basins and downstream, and ensure continued proper recharge of groundwater supplies.

CON-5G. Miami-Dade County shall actively encourage the creation of buffers between water impoundment areas and development in order to increase the level of flood protection that is provided to developed areas.

CON-5H. Miami-Dade County shall periodically evaluate stormwater drainage criteria as outlined in the County Code to ensure proper flood protection is being provided to County residents.

Objective CON-6

Soils and mineral resources in Miami-Dade County shall be conserved and appropriately utilized in keeping with their intrinsic values.

Policies

CON-6A. Areas of highest suitability for mineral extraction in Miami-Dade County shall be reserved for that use and shall be protected from premature encroachment by incompatible uses.

- CON-6B. Miami-Dade County shall develop guidelines for rock quarries that will provide high potential for the support of native flora and fauna and compatible recreational use in these areas once the quarrying operations have been completed.
- CON-6C. Areas in Miami-Dade County having soils with good potential for agricultural use without additional drainage of wetlands shall be protected from premature urban encroachment.
- CON-6D. All sites having soils which cannot properly support proposed structures shall have their soils excavated and replaced with suitable fill material or they shall be otherwise stabilized as necessary to ensure the structural integrity of the proposed development for the expected life of the development and structures under normal use.

Objective CON-7

Miami-Dade County shall protect and preserve the biological and hydrological functions of the Future Wetlands identified in the Land Use Element. Future impacts to the biological functions of publicly and privately owned wetlands shall be mitigated. All privately owned wetlands identified by the South Florida Regional Planning Council as Natural Resources of Regional Significance and wetlands on Federal, State, or County land acquisition lists shall be supported as a high priority for public acquisition. Publicly acquired wetlands shall be restored and managed for their natural resource, habitat and hydrologic values.

Policies

- CON-7A. The degradation or destruction of wetlands shall be limited to activities that 1) are necessary to prevent or eliminate a threat to public health, safety or welfare; or 2) are water dependent, clearly in the public interest and no other reasonable alternative exists; or 3) are carried out in accordance with an approved basin management plan; or 4) are in areas that have been highly disturbed or degraded and where restoration of a wetland with an equal or greater value in accordance with federal, State and local regulations is feasible. Habitats critical to endangered or threatened species shall not be destroyed.
- CON-7B. Offroad vehicles shall not be allowed in the future publicly owned and managed wetlands identified in the adopted Land Use Element unless there are permitted facilities or areas specified for their use.
- CON-7C. Miami-Dade County shall continue to promote the restoration and maintenance of the natural, surface water flow regimes into, and through wetland systems such as the Shark River Slough, Everglades National Park and the saline wetlands of southeastern Miami-Dade County.

- CON-7D. Management plans shall be developed to govern all development activity within all natural communities on County-owned lands to protect natural and historic resources. The Department of Environmental Resources Management (DERM) and the Office of Historic Preservation shall assist the appropriate County agencies in the development of these plans, which shall be subject to public review and comment as they are prepared and implemented.
- CON-7E. All wetlands on the State Save Our Rivers or Miami-Dade County Environmentally Endangered Lands acquisition lists shall be given very high priority for public acquisition as are all lands within the Environmental Protection category on the Land Use Plan (LUP) map.
- CON-7F. Wetland mitigation areas shall be preferentially located adjacent to canals or in biologically degraded wetlands that are adjacent to, or that could serve as corridors between, Resources of Regional Significance.
- CON-7G. Miami-Dade County shall continue to work with the appropriate federal, State, regional and local agencies to develop wetland basin management plans for all the planned future wetlands areas in Miami-Dade County. These plans shall identify biological and wildlife habitat values, recharge and runoff detention values, and key management issues, including fill encroachment criteria. They shall also describe a coordinated approach to be followed by all levels of government in their respective permitting functions in order to retain the long term, net wetland values of these areas. Priority for plan development shall be given to the wetlands in South Miami-Dade County that are slated for purchase under the Save Our Rivers and Miami-Dade County Environmentally Endangered Lands programs.
- CON-7H. Miami-Dade County shall provide dedicated funding sources for the long-term management and maintenance of Environmentally Endangered Lands and publicly owned Natural Forest Communities by 2015.
- CON-7I. Miami-Dade County shall coordinate with the South Florida Water Management District in order to implement strategies to streamline the wetland permitting process, which may include but not be limited to the delegation of additional permitting functions to the County.
- CON-7J. In evaluating applications that will result in alterations to wetlands, Miami-Dade County shall consider the applications' consistency with Comprehensive Everglades Restoration Program (CERP) objectives. Applications that are found to be inconsistent with CERP objectives may be denied.

Objective CON-8

Upland forests included on Miami-Dade County's Natural Forest Inventory shall be maintained and protected.

Policies

- CON-8A. Specimen trees and Natural Forest Communities in Miami-Dade County shall be protected through the maintenance and enforcement of the County's Tree and Forest Protection and Landscape Code, as may be amended from time to time. The County's Natural Forest Inventory shall be revised periodically to reflect current Natural Forest Community conditions. A Natural Forest Community shall not be removed from the inventory unless its quality and resource values have been degraded to the point where it cannot be restored.
- CON-8B. The environmentally sensitive hardwood hammocks and the pinelands on the State Conservation and Recreation Lands (CARL) and Miami-Dade County Environmentally Endangered Lands Acquisition lists shall be given very high priority for public acquisition as are lands within the Environmental Protection category on the Land Use Plan (LUP) map.
- CON-8C. Development in the forested portions of publicly owned Natural Forest Communities designated by the Board of County Commissioners pursuant to Resolution No. R-1764-84, as may be amended from time to time, shall be permitted only if it is clearly in the public interest, there is no feasible alternative, and such development does not adversely impact other remaining natural forest resources on-site.
- CON-8D. Where hammocks or pinelands are contained within prospective development sites, they shall be given priority for designation as landscape and open space areas and left intact. The extent of hammock and pineland area destroyed shall be minimized by the use of native plant buffers, clustering, large lot zoning, and/or reduced roadway widths. Care shall be exercised when developing adjacent land to minimize root damage and filling. Disturbance to the forest canopy shall be minimized and confined to the least viable areas. Preservation areas shall be located and configured to protect rare, threatened and endangered species and to allow for prescribed burning, where applicable. In the protected forest areas, understory vegetation and associated geologic features shall be protected and maintained.
- CON-8E. The destruction of environmentally sensitive Natural Forest Communities shall be kept to a minimum; a long-term mitigation and management plan shall be developed to assure the continued maintenance of the remaining forest lands and the restoration or creation of at least an equal amount of forest lands to those destroyed.
- CON-8F. Miami-Dade County shall continue to seek natural areas land management funds to conduct prescribed burns, and other appropriate techniques to establish the appropriate fire regime for natural areas, while minimizing deleterious off-target effects to native plant and animal species and negative impacts to the public health, safety and welfare. The County shall also seek funds to control and remove exotic

plant species from public rights-of-way and other County-owned land outside of parks and natural areas.

- CON-8G. The Natural Forest Communities that are owned by the Miami-Dade County School District shall be preserved and maintained and used as natural outdoor laboratories. Tracts of land that are to be developed as future school sites should be landscaped with appropriate xeriscape and/or native plant material. Wherever feasible, upland or wetland revegetation projects should be incorporated into the school's landscape design, and teaching curriculum.
- CON-8H. Miami-Dade County's tree preservation and landscape requirements shall be coordinated. Tree preservation programs should focus primarily on Natural Forest Communities and specimen tree protection, maintenance, and restoration. The County shall adopt and enforce a comprehensive landscape code and promote xeriscape principles and the planting and protection of trees with an emphasis upon the provision and preservation of canopy for aesthetics, physical comfort, energy savings, economic benefits, and wildlife habitat.
- CON-8I. The following exotic pest plants shall not be sold, propagated, or planted within Miami-Dade County. If existing on a development site, they shall be removed prior to development.

Species – Latin Name	Species Common Name
<i>Ficus benghalensis</i>	Banyan Fig
<i>Bischofia javanica</i>	Bishopwood
<i>Jasminum fluminense</i>	Brazilian Jasmine
<i>Schinus terebintholius</i>	Brazilian Pepper
<i>Neyraudia reynaudiana</i>	Burma Reed (Cane Grass)
<i>Cupaniopsis anacardioides</i>	Carrotwood
<i>Ricinus communis</i>	Castor Bean
<i>Mimosa pigra</i>	Catclaw Mimosa
<i>Lygodium japonicum</i>	Climbing Fern
<i>Cestrum diurnum</i>	Day Blooming Jasmine
<i>Acacia auriculiformis</i>	Earleaf Acacia
<i>Jasminum dichotomum</i>	Gold Coast Jasmine
<i>Flacourtia indica</i>	Governor's Plum
<i>Dalbergia sissoo</i>	Indian Rosewood
<i>Columbrina asiatica</i>	Lather Leaf
<i>Leucaena leucocephala</i>	Lead Tree
<i>Ficus altissima</i>	Lofty Fig (Banyan Tree)
<i>Hibiscus tiliaceus</i>	Mahoe
<i>Meleleuca quinquenervia</i>	Meleleuca (Punk Tree)
<i>Pennisetum purpureum</i>	Napier Grass
<i>Tribulus cistoides</i>	Puncture Vine
<i>Schefflera actinophylla</i>	Queensland Umbrella Tree
<i>Adenanthera pavonina</i>	Red Sandalwood

<i>Adenanthera pavonina</i>	Red Sandalwood
<i>Thespesia populnea</i>	Seaside Mahoe
<i>Ardisia elliptica</i> ,	Shoebutton Ardisia
<i>Ardisia humilus</i>	
<i>Solanum viarum</i>	Tropical Soda Apple
<i>Albizia lebbbeck</i>	Woman's Tongue
<i>Merremia tuberosa</i>	Woodrose

The following exotic plant species may not be planted within 500 feet of native plant communities. These plant species have been documented by the Florida Exotic Pest Plant Council, the Miami-Dade County Park and Recreation Department's Natural Area's Management Program, and the Miami-Dade County Department of Environmental Resources Management to be invasive pests in natural areas of Miami-Dade County.

Species Latin Name	Species Common Name-
Bauhinia variegata	orchid tree
Bauhinia purperata	orchid tree
Calophyllum calaba	Mastwood
Catharanthus roseus	Madagascar periwinkle
Derris Indica	pongam
Eugenia uniflora	Surinam cherry
Epipremnum pinnatum cv. Aureum	pothos
Kalanchoe pinnata	life plant
Lantana camera	Lantana
Murraya paniculata (orange jessamine)	orange jessamine
Pittosporum tobira(pittosporum)	Japanese pittosporum
Pouteria campechiana	canistel
Psidium guyava	Guava
Psidium littorale	Cattley guava
Rhoeo spathacea	oyster plant
Sansevieria hyacinthoides (= S. trifasciata)-	bowstring hemp
Scaevola taccada var. sericea (=S. frutescens; =S. sericea)	scaevola; half-flower
Syngonium podophyllum	arrowhead
Syzygium cumini	jambolan; Java plum
Syzyguim jambos	rose apple
Terminalia catappa	tropical almond
Tribulus cistoides	Puncture vine
Washingtonia spp.	Washington Palm
Wedelia trilobata	wedelia
Zebrina pendula	wandering zebrine

- CON-8J. Efforts should be made to propagate and reestablish where practical, endangered, threatened, and potentially endangered native plants in Miami-Dade County. (See Appendix A). The current list of federally listed plants in Miami-Dade County should be reevaluated and additional species should be proposed for listing, if appropriate. Through its land acquisition and regulatory processes, Miami-Dade County shall continue to protect federally and State-listed plant species to the maximum extent possible.

- CON-8K. All new plantings on lands owned and managed by Miami-Dade County shall include federally or State listed plants, if appropriate, and other native plant and/or xeriscape plant material, wherever feasible.
- CON-8L. The 24,560 acres of native habitat at the Training and Transition Airport outside of the security fence shall be managed by the same standards applied to the Big Cypress National Preserve.
- CON-8M. Miami-Dade County shall seek to increase the percentage of tree canopy from the present level of 10% to the national average of 30% through the implementation and/or enforcement of: Adopt-A-Tree and other programs; landscape and tree protection ordinances; and, other mechanisms as feasible and appropriate.
- CON-8N. Miami-Dade County shall evaluate the feasibility of creating and implementing programs to provide technical assistance to private Environmentally Endangered Lands and Natural Forest Communities covenant holders.

Objective CON-9

Freshwater fish and wildlife shall be conserved and used in an environmentally sound manner and the net amount of habitat critical to federal, state or County designated endangered, threatened, or rare species or species of special concern shall be preserved.

Policies

- CON-9A. All activities that adversely affect habitat that is critical to federal or State designated, endangered or threatened species shall be prohibited unless such activity(ies) are a public necessity and there are no possible alternative sites where the activity(ies) can occur. (See Appendix B)
- CON-9B. All nesting, roosting and feeding habitats used by federal or State designated endangered or threatened species, shall be protected and buffered from surrounding development or activities, where necessary.
- CON-9C. Rookeries and nesting sites used by federal or State designated endangered or threatened species shall not be moved or destroyed.
- CON-9D. The County should work with the US Fish and Wildlife Service, the Florida Fish and Wildlife Conservation Commission and other appropriate entities to describe and map wildlife populations, and by 2005, to determine the wildlife habitat values for all remaining freshwater wetlands and environmentally sensitive natural forest communities.
- CON-9E. Conservation of upland wildlife habitats shall be taken into consideration during development evaluation and permitting processes.

CON-9F. The County's planning for the future development of open space and wetland mitigation areas shall include the protection, conservation and/or restoration of wildlife habitats.

Monitoring and Data Programs

Objective CON-1. Air Quality

This objective will be measured by the number of exceedances of the National Ambient Air Quality Standards (NAAQS) or exceedances of any future additional standards promulgated by the US Environmental Protection Agency during the period covered by the EAR. A second monitoring measure will include the number of permit violations.

Objective CON-2. Ground and Surface Water Quality

This objective will be met in any of the primary drainage basins, or individual sub-basins within a primary basin, when the ambient five year average value for each of the twelve NPDES priority pollutants in that basin or sub-basin does not exceed the target criteria. A second monitoring measure will be the number of groundwater exceedances based on the groundwater and wellfield monitoring programs.

Objective CON-3. Wellfield Protection

This objective will be measured by the number of exceedances of any applicable water quality standard within wellfield protection areas, and the number of times that pumpage has to be curtailed due to pollution incidents that threaten water resources within any defined wellfield protection area.

Objective CON-4. Aquifer Recharge and Water Storage

This objective will be measured by the number of cut and fill permits issued in the various basin areas, the amount of French drain installed and the number of permitted developments with insufficient land storage retention areas.

Objective CON-5. Basin Management

This objective will be measured by the number of stormwater master plans that have been completed and implemented, and the number of stormwater system improvements that have been made.

Objective CON-6. Soil and Mineral Resources

This objective will be measured by the number of acres that have been retained in agriculture and the acreage of open land areas where rockmining is an allowable use that are being actively rockmined.

Objective CON-7. Wetland Protection and Restoration

This objective will be measured by the acreage of wetlands that have been acquired and managed through the South Florida Water Management District Save Our Rivers Program, the Miami-Dade County Environmentally Endangered Lands Program or other public land acquisition and management program to preserve their wetland values.

Objective CON-8. Upland Protection and Restoration

This objective will be measured by the acreage of hammocks and pinelands, retained in public ownership or acquired by public land acquisition programs. Additional measures will include the number of sites where management plans have been, or are being implemented, the number of Endangered Lands Covenants and the number of sites and acreage retained in Natural Forest Communities.

Objective CON-9. Freshwater Fishes and Wildlife Protection

This objective will be measured by the net changes in the number of listed plant and animal species and the net changes in numbers of species in individual categories.

The following list updates and replaces in its entirety the list found in Appendix A of the Conservation, Aquifer Recharge and Drainage Element Support Component. The appendix is included herein as part of the Conservation Element Adopted Component.

Appendix A

Federal and State Designated Endangered, Threatened and Potentially Endangered Flora in Miami-Dade County

Scientific Name	Common Name	Designated State	Status Federal
<i>Amorpha crenulata</i>	Crenulate (=Miami) lead plant	E	E
<i>Anemia wrightii</i>	Parsley Fern	E	NL
<i>Asimina tetramera</i>	Four-pedal paw paw	E	NL
<i>Bourreria cassinifolia</i>	Little strongback	E	NL
<i>Brassia caudata</i>	Long-tailed spider orchid	T	NL
<i>Brickellia eupatorioides</i> var. <i>floridana</i> (= <i>B mosieri</i>)	Florida brickell-brush; Florida boneset	E	C2
<i>Calyptanthus zuzygium</i>	Myrtle-of-the-river	E	NL
<i>Campanula robinsiae</i>	Brooksville bellflower	E	NL
<i>Campyloneurum angustifolium</i>	Marrow strap fern	E	NL
<i>Canella winterana</i>	Wild cinnamon bark	E	NL
<i>Cassia keysensis</i> (= <i>Chaemecrista</i>)	Big Pine partridge pea;	T	NL
<i>Catopsis berteroniana</i>	Powdery catopsis	E	NL
<i>Centrogenium setaceum</i>	Spurred neottia	E	NL
<i>Cereus eriophorus</i> var. <i>fragrans</i>	Fragrant prickly apple	E	NL
<i>Cereus robinii</i>	Key tree cactus	E	NL
<i>Chamaesyce deltoidea deltoidea</i>	Deltoid Spurge	E	E
<i>Chamaesyce garberi</i>	Garber's spurge	E	T
<i>Chionanthus pygmaeus</i>	Pygmy fringe-tree	E	NL
<i>Chrysopsis floridana</i>	Florida golden aster	E	NL
<i>Cladonia perforata</i>	Florida perforate cladonia	E	NL
<i>Clitoria fragrans</i>	Pigeon wings	T	NL
<i>Conradina brevifolia</i>	Short-leaved rosemary	E	C2
<i>Conradina etonia</i>	Etonia rosemary	E	NL
<i>Conradina glabra</i>	Apalachicola rosemary	E	NL
<i>Crotalaria avonensis</i>	Avon park harebells	E	NL
<i>Cucurbita okeechobeensis</i>	Okeechobee gourd	E	E
<i>Deeringothamnus pulchellus</i>	Beautiful paw paw	E	NL
<i>Deeringothamnus rugelii</i>	Rugel's paw paw	E	NL
<i>Dicerandra christmanii</i>	Garett's mint	E	NL
<i>Dicerandra cornutissima</i>	Longspurred mint	E	NL
<i>Dicerandra frutescens</i>	Scrub mint	E	NL
<i>Dicerandra immaculata</i>	Lakela's Mint	E	NL
<i>Erigonum longifolium gnaphalifolium</i>	Scrub buckwheat	T	NL
<i>Eryngium cuneifolium</i>	Snakeroot	E	NL
<i>Euphorbia telephioides</i>	Telephus spurge	T	NL
<i>Galactia smallii</i>	Small's milkpea	E	E
<i>Halophila johnsonii</i>	Johnson's seagrass	T	NL
<i>Harperocallis flava</i>	Harper's beauty	E	NL
<i>Hypericum cumulicola</i>	Highlands scrub hypericum	E	NL
<i>Jacquemontia reclinata</i>	Beach Jacquemontia	E	E
<i>Justicia cooleyi</i>	Cooley's water-willow	E	NL
<i>Lindera melissifolia</i>	Pondberry	E	NL
<i>Lupinus aridorum</i>	Scrub lupine	E	NL
<i>Macbridea alba</i>	White birds-in-a-nest	T	NL
<i>Nolina brittoniana</i>	Britton's Beargrass	E	NL
<i>Paronychia chartacea</i>	Papery whitlow-wort	T	NL
<i>Pilosocereus robinii</i>	Key Tree Cactus	E	NL

Scientific Name	Common Name	Designated State	Status Federal
<i>Pinguicula ionantha</i>	Godfrey's butterwort	T	NL
<i>Polygala lewtonii</i>	Lewton's polygala	E	NL
<i>Polygonella basiramia</i>	Wireweed	E	NL
<i>Polygonella myriophylla</i>	Sandlace	E	NL
<i>Polygala smallii</i>	Tiny Polygala	E	E
<i>Prunus geniculata</i>	Scrub plant	E	NL
<i>Rhododendron chapmanii</i>	Chapman rhododendron	E	NL
<i>Ribes echinellum</i>	Miccosukee Gooseberry	T	NL
<i>Schwalbea Americana</i>	American chaffseed	E	NL
<i>Scutellaria floridana</i>	Florida Skullcap	T	NL
<i>Silene polypetal</i>	Fringed campion	E	NL
<i>Spigelia gentianoides</i>	Pinkroot gentian	E	NL
<i>Thalictrum cooley</i>	Cooley's meadowrue	E	NL
<i>Torreya taxifolia</i>	Florida Torreya	E	NL
<i>Warea wide-leaf</i>	Warea amplexifolia	E	NL
<i>Warea carteri</i>	Carter's mustard	E	E
<i>Ziziphus celata</i>	Florida ziziphus	E	NL

Key:

NL = Not Listed

1) Federal Listings:

- E = Listed as Endangered Species in the List of Endangered and Threatened Wildlife and Plants under the provisions of the Endangered Species Act. Defined as any species which is in danger of extinction throughout all or a significant portion of its range.
- T = Listed as Threatened Species. Defined as any species which is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range.
- C1 = Candidate Species for addition to the List of Endangered and Threatened Wildlife and Plants, Category 1. Taxa for which the US Fish and Wildlife Service (USFWS) currently has substantial information on hand to support the biological appropriateness of proposing to list the species as endangered or threatened.
- C2 = Candidate Species, Category 2. Taxa for which information now in possession of the USFWS indicates that proposing to list the species as endangered or threatened is possibly appropriate, but for which conclusive data on biological vulnerability and threat(s) are not currently available to support proposed rules at this time.

2) State Listings:

- E = Listed as Endangered Plants in the Preservation of Native Flora of Florida Act. Defined as species of plants native to the State that are in imminent danger of extinction within the State, the survival of which is unlikely if the causes of a decline in the number of plants continue, and includes all species determined to be endangered or threatened pursuant to the Federal Endangered Species Act of 1973, as amended.
- T = Listed as Threatened Plants in the Preservation of Native Flora of Florida Act. Defined as species native to the State that are in rapid decline in the number of plants within the State, but which have not so decreased in such number as to cause them to be endangered.
- CE = Listed as a Commercially Exploited Plant in the Preservation of Native Flora of Florida Act. Defined as species native to the State, which are subject to being removed in significant numbers from native habitats in the State and sold or transported for sale.

Appendix B

List of Federal and State Designated Endangered, Threatened and Potentially Endangered Fauna in Miami-Dade County

Scientific Name	Common Name	Designated State	Status Federal
FISH			
<i>Acipenser oxyrinchus</i>	Atlantic Sturgeon	SSC	T
<i>Acipenser brevirostrum</i>	Shortnose Sturgeon	E	E
<i>Cyprinodon variegatus hubbsi</i>	Lake Eustis pupfish	SSC	NL
<i>Etheostoma histrio</i>	Harlequin darter	SSC	NL
<i>Etheostoma olmstedii maculaticeps</i>	Southern tessellated darter	SSC	NL
<i>Fundulus jenkinsi</i>	Saltmarsh topminnow	SSC	NL
<i>Menidia conchorum</i>	Key silverside	T	NL
<i>Micropterus notius</i>	Suwannee bass	SSC	NL
<i>Notropis melanostomus</i>	Blackmouth shiner	E	NL
<i>Pteronotropsis welaka</i>	Bluenose shiner	SSC	NL
<i>Rivulus marmoratus</i>	Mangrove rivulus	SSC	NL
<i>Starksia starcki</i>	Key blenny	SSC	NL
AMPHIBIANS AND REPTILES			
<i>Ambystoma cingulatum</i>	Flatwoods salamander	SSC	T
<i>Alligator mississippiensis</i>	American alligator	SSC	T
<i>Crocodylus acutus</i>	American crocodile	E	E
<i>Drymarchon corais couperi</i>	Eastern indigo snake	T	T
<i>Elaphe guttata</i>	Red rat snake	T	T
<i>Eumeces egregius lividus</i>	Bluetail mole skink	T	T
<i>Eumeces egregius egregius s</i>	Florida key mole sink	SSC	NL
<i>Gopherus polyphemus</i>	Gopher Tortoise	SSC	C2
<i>Graptemys barbouri</i>	Barbour's map turtle	SSC	NL
<i>Haideotriton wallacei</i>	Georgia blind salamander	SSC	NL
<i>Hyla andersonii</i>	Pine barrens treefrog	SSC	NL
<i>Rana okaloosae</i>	Florida bogfrog	SSC	NL
<i>Rana capito</i>	Gopher frog	SSC	NL
<i>Kinosternon bauri</i>	Striped mud turtle	E	NL
<i>Lepidochelys Kempii</i>	Atlantic ridley turtle	E	E
<i>Macroclmys temminckii</i>	Alligator snapping turtle	SSC	NL
<i>Nerodia clarkii taeniata</i>	Atlantic salt marsh water snake	T	T
<i>Neoseps reynoldsi</i>	Sand skink	T	T
<i>Pituophis melanoleucus mugitus</i>	Florida pine snake	SSC	C2
<i>Pseudobranchius striatus lustricolus</i>	Gulf hammock dwarf siren	NL	C2
<i>Pseudemys concinna suwanniensis</i>	Suwannee cooter	SSC	NL
<i>Sitlosoma extenuatum</i>	Short-tailed snake	T	NL
<i>Storeria dekayi victa</i>	Florida brown snake	T	NL
<i>Tantilla oolitica</i>	Rim Rock Crowned Snake	T	C2
<i>Thamnophis sauritus sackeni</i>	Florida Ribbon Snake	T	NL
BIRDS			
<i>Ammodramus maritimus mirabilis</i>	Cape sable seaside sparrow	E	E
<i>Ammodramus savannarum floridanus</i>	Florida grasshopper sparrow	E	E
<i>Ammodramus maritimes pennisulae</i>	Scott's seaside sparrow	SSC	NL
<i>Ammodramus maritimus junciculus</i>	Wakulla seaside sparrow	SSC	NL
<i>Aphelocoma coerulescens coerulescens</i>	Florida scrub jay	T	T

Scientific Name	Common Name	Designated State	Status Federal
<i>Aramus guarauna</i>	Limpkin	SSC	NL
<i>Athene cunicularia</i>	Florida burrowing owl	SSC	NL
<i>Campephilus principalis</i>	Ivory-billed woodpecker	E	E
<i>Caracara cheriway</i>	Crested caracara	T	T
<i>Charadrius melodus</i>	Piping plover	T	T
<i>Charadrius alexandrinus</i>	Cuban snowy plover	T	NL
<i>Cistothorus palustris marianae</i>	Marian's marsh wren	SSC	NL
<i>Cistothorus palustris griseus</i>	Worthington's marsh wren	SSC	NL
<i>Dendroica Kirtlandii</i>	Kirtland's warbler	E	NL
<i>Egretta caerulea</i>	Little blue heron	SSC	NL
<i>Egretta rufescens</i>	Reddish egret	SSC	C2
<i>Egretta thula</i>	Snowy egret	SSC	NL
<i>Egretta tricolor</i>	Tricolored heron	SSC	NL
<i>Eudocimus albus</i>	White ibis	SSC	NL
<i>Falco peregrinus</i>	Peregrine falcon	E	NL
<i>Falco sparverius paulus</i>	Southeastern American kestrel	T	C2
<i>Grus Canadensis pratensis</i>	Florida sandhill crane	T	NL
<i>Grus Americana</i>	Whooping crane	SSC	NL
<i>Haliaeetus leucocephalus</i>	Bald eagle	T	E
<i>Mycteria americana</i>	Wood stork	E	E
<i>Pandion haliaetus</i>	Osprey	SSC	NL
<i>Platalea ajaja</i>	Roseate spoonbill	SSC	NL
<i>Picoides borealis</i>	Red-cockaded woodpecker	SSC	E
<i>Rostrhamus sociabilis</i>	Snail kite	E	E
<i>Rynchops niger</i>	Black skimmer	SSC	NL
<i>Sterna antillarum</i>	Least tern	T	NL
<i>Sterna dougalli</i>	Roseate tern	T	T
<i>Vermivora bachmanii</i>	Bachman's warbler	E	E

MAMMALS

<i>Balaenoptera borealis</i>	Sei whale	E	NL
<i>Balaenoptera physalus</i>	Finback whale	E	E
<i>Blarina carolinensis shermani</i>	Sherman's short-tailed shrew	SSC	C2
<i>Eumops glaucinus floridanus</i>	Florida mastiff bat	E	C1
<i>Eubalaena glacialis</i>	North Atlantic right whale	E	NL
<i>Megaptera novaeangliae</i>	Humpback whale	E	E
<i>Monachus tropicalis</i>	Caribbean monk seal	NL	NL
<i>Neotoma floridana smalli</i>	Key Largo woodrat	E	E
<i>Odocoileus virginianus clavium</i>	Key deer	E	E
<i>Peromyscus polionotus niveiventris</i>	Southeastern beach mouse	T	T
<i>Peromyscus gossypinus allapaticola</i>	Key Largo Cotton Mouse	E	E
<i>Peromyscus polionotus allopheys</i>	Choctawhatchee beach mouse	E	E
<i>Peromyscus polionotus trissyllepsis</i>	Perdido Key mouse	E	E
<i>Peromyscus polionotus phasma</i>	Anastasia Island Beach mouse	E	E
<i>Physeter catodon</i>	Sperm whale	E	E
<i>Physter macrocephalus</i>	Sperm whale	E	NL
<i>Podomys floridanus</i>	Florida mouse	SSC	C2
<i>Sciurus niger avicennia</i>	Big Cypress fox squirrel	SSC	C2
<i>Sciurus niger shermani</i>	Sherman's fox squirrel	SSC	C2
<i>Trichechus manatus latirostris</i>	Florida manatee	E	E

INVERTEBRATES

Scientific Name	Common Name	Designated State	Status Federal
<u>INVERTEBRATES</u>			
CRUSTACEANS			
<i>Palaemonetes cummingi</i>	Squirrel chimney cave shrimp	NL	T
<i>Procambarus econfinae</i>	Panama city crayfish	SSC	NL
<i>Procambarus erythrops</i>	Sims sink crayfish	SSC	NL
<i>Procambarus Pictus</i>	Black creek crayfish	SSC	NL
INSECTS			
<i>Cyclargus thomasi bethunebakeri</i>	Miami blue butterfly	E	NL
<i>Heraclides aristodemus ponceanus</i>	Schaus swallowtail butterfly	E	E
MOLLUSCS			
<i>Amblema neislerii</i>	Fat three-ridge	NL	T
<i>Elliptio chipolaensis</i>	Chipola slabshell	NL	T
<i>Elliptioideus sloarianus</i>	Purple bankclimber	NL	T
<i>Lampsilis subangulata</i>	Shinyrayed Pocketbook	NL	T
<i>Medionidus penicillatus</i>	Gulf moccasinshell	NL	E
<i>Medionidus simpsonianus</i>	Ochlockonee moccasinshell	NL	E
<i>Pleurobema pyriforme</i>	Oval pigtoe	NL	E

Key:

NL = Not Listed

1) Federal Listings:

- E = Listed as Endangered Species in the List of Endangered and Threatened Wildlife and Plants under the provisions of the Endangered Species Act. Defined as any species that is in danger of extinction throughout all or a significant portion of its range.
- T = Listed as Threatened Species. Defined as any species that is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range.
- C1 = Candidate Species for addition to the List of Endangered and Threatened Wildlife and Plants, Category 1. Taxa for which the US Fish and Wildlife Service (USFWS) currently has substantial information on hand to support the biological appropriateness of proposing to list the species as endangered or threatened.
- C2 = Candidate Species, Category 2. Taxa for which information now in possession of the USFWS indicates that proposing to list the species as endangered or threatened is possibly appropriate, but for which conclusive data on biological vulnerability and threat(s) are not currently available to support proposed rules at this time.

2) State Listings:

- E = Listed as Endangered Species by the Florida Game and Freshwater Fish Commission (FGFWFC). Defined as a species, subspecies, or isolated population which is so rare or depleted in number or so restricted in range of habitat due to any man-made or natural factors that it is in immediate danger of extinction or extirpation from the State, or which may attain such a status within the immediate future.
- T = Listed as Threatened Species by the FGFWFC. Defined as a species, subspecies, or isolated population which is acutely vulnerable to environmental alteration, declining in number at a rapid rate, or whose range

or habitat is declining in area at a rapid rate and as a consequence is destined or very likely to become an endangered species within the foreseeable future.

SSC = Listed as Species of Special Concern by the FGFWFC. Defined as a species, subspecies, or isolated population which warrants special protection, recognition, or consideration because it has an inherent significant vulnerability to habitat modification, environmental alteration, human disturbance, or substantial human exploitation which, in the foreseeable future, may result in its becoming a threatened species.